

NIPPON STEEL HF-ERW PIPE

On the Leading Edge: Nippon Steel

NIPPON STEEL

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Cat. No. PC317 2008.10 PDF

Printed in Japan

Nippon Steel Corporation



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Characteristics

1 Superior Material

Nippon Steel production system begins with advanced metallurgy and clean BOF steelmaking practices. After continuous casting, at hot-rolling process, hot-rolled strip of optimum quality for pipe making is produced.

2 High Dimensional Accuracy

High uniform wall thickness and smooth finish free from nonmetallic inclusions and surface defects provide Linepipe with a superior level of quality and excellent dimensional accuracy as well as high performance properties.

3 Variety of Products

- 1 High strength linepipe**
- 2 High toughness linepipe**
- 3 Anti-Sour linepipe**
- 4 OCTG pipe**

4 High Reliability of Weld

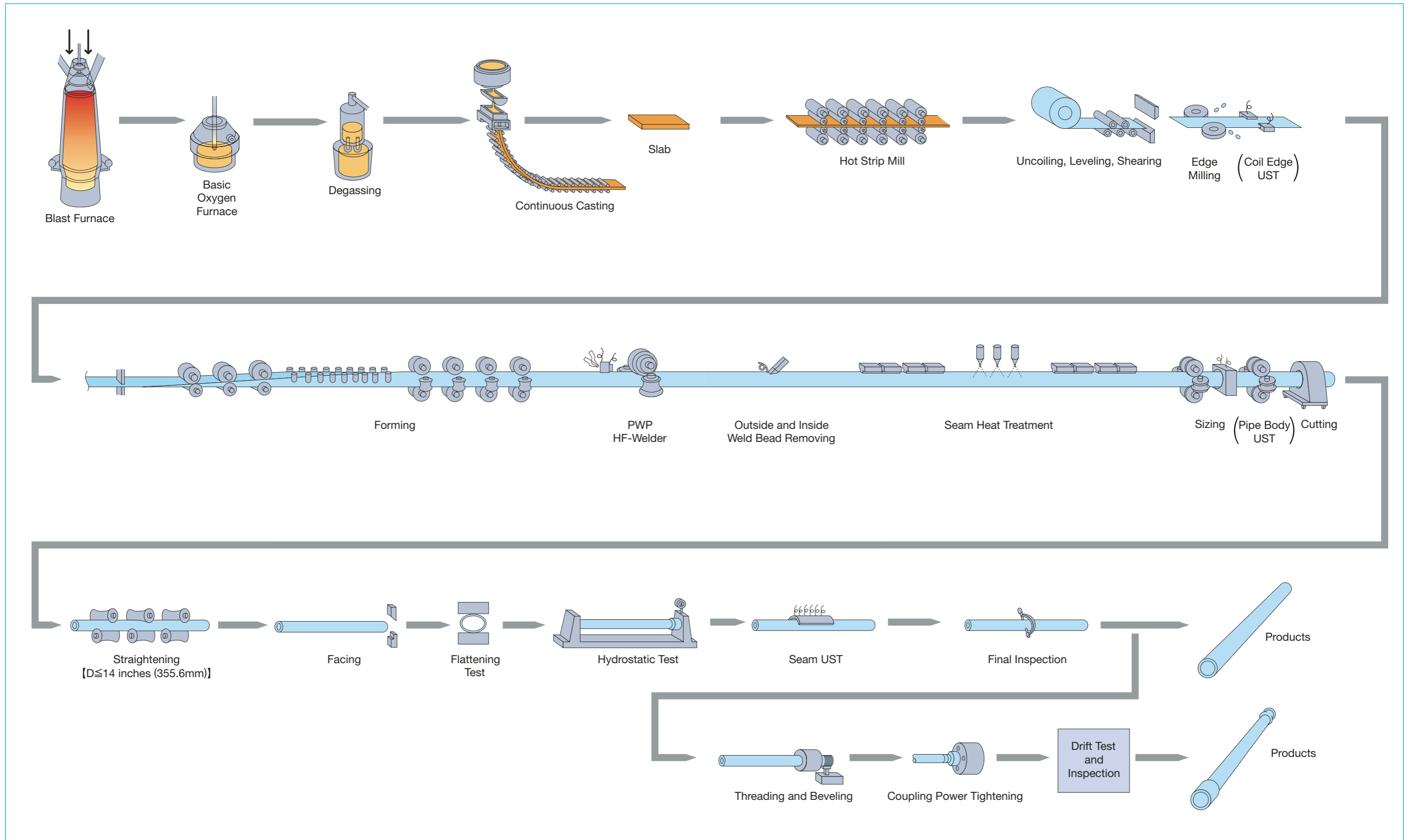
The unique welding condition control and monitoring system ensures quality of the weld along its entire length.

5 Excellent Quality

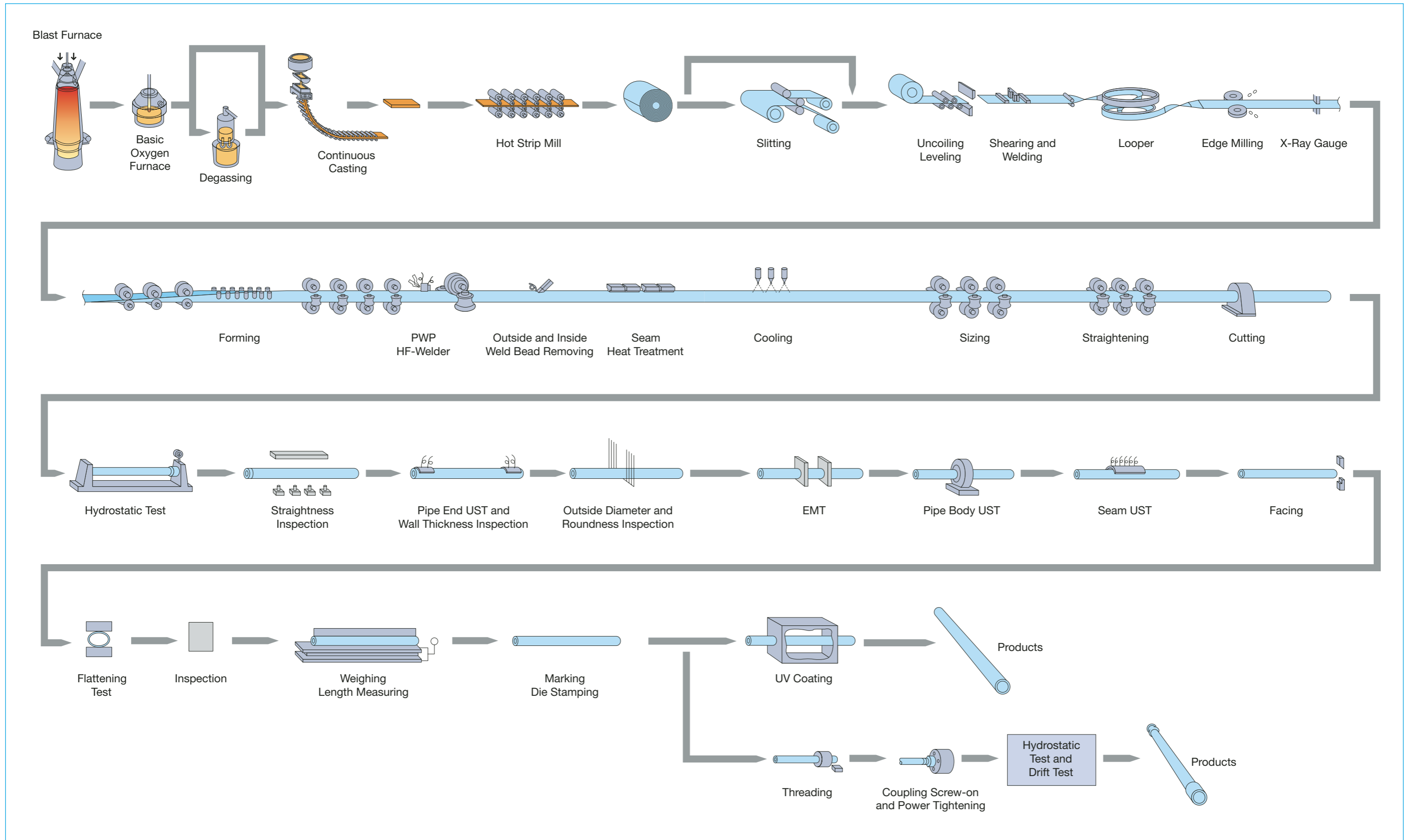
From steelmaking to pipe manufacture, quality is strictly controlled through every production step to ensure pipe products. Testing and inspection include body lamination UST, highly sensitive UST for weld seam, hydrostatic testing and numerous mechanical tests.



24-inch Mill Manufacturing Process



16-inch Mill Manufacturing Process



Principal Processes

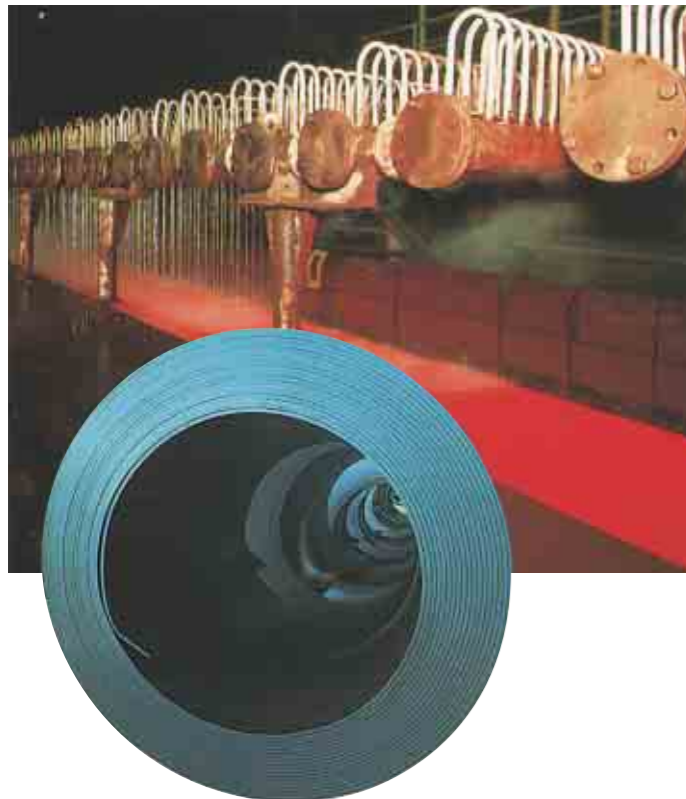
Steelmaking

Degassing and desulphurizing during steelmaking process supply clean steel with low non-metallic inclusions.



Hot Rolling

Advanced hot rolling supplies hot coils with fine grain structure and high dimensional accuracy.



PWP HF-Welder

Perfect Welding Process, developed by Nippon Steel, produces high-quality weld. A welded seam is inspected by ultrasonic tester.



Welded Seam Heat Treatment

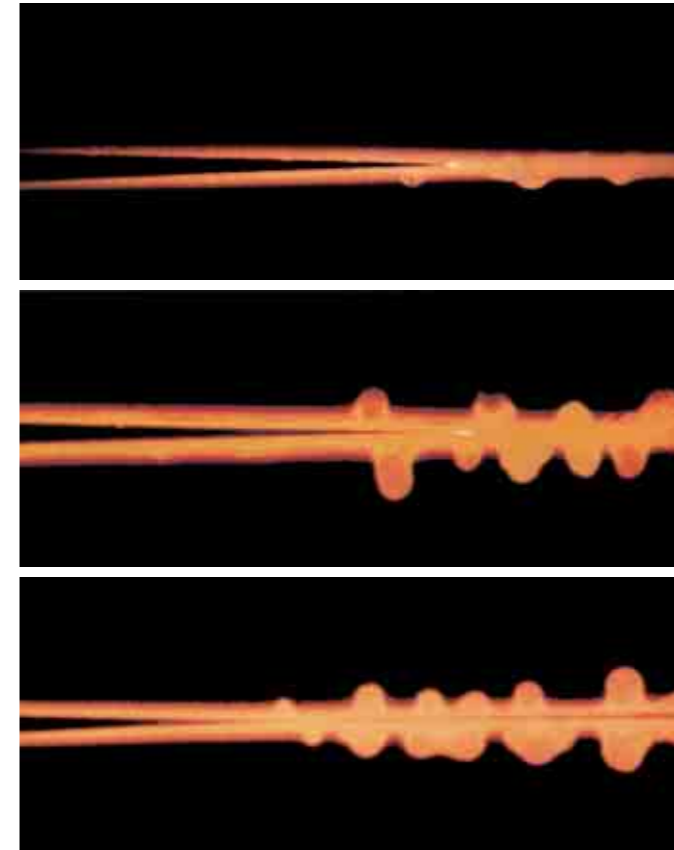
Seam heat treatment homogenizes microstructure and physical properties at welded zone as same as those of base metal. Exact seam position is indicated by fluorescent marker for weld seam tracking.



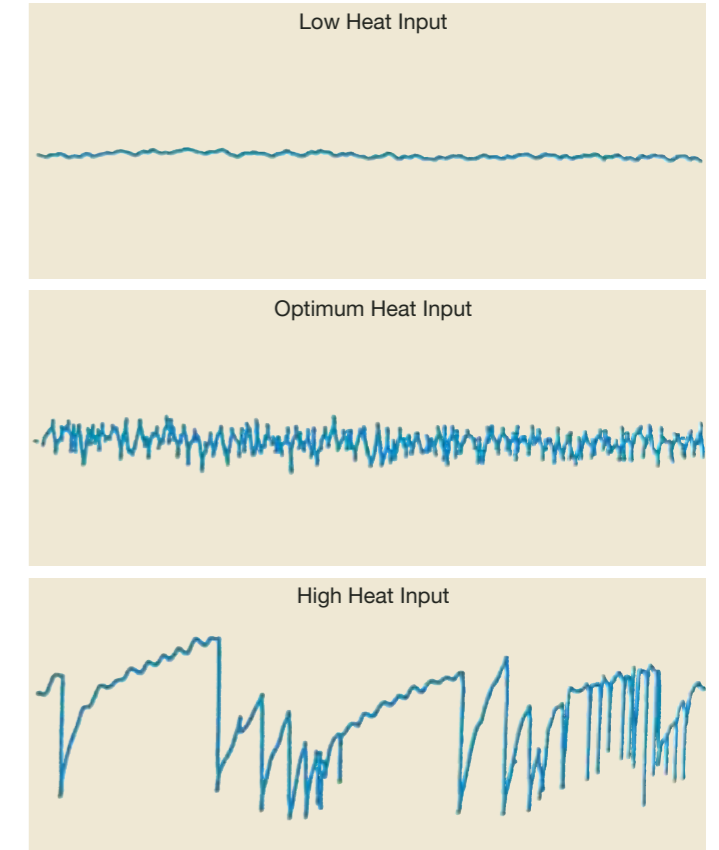
HF-ERW Weld Heat Input Control

1 Welding Phenomena

Varying combinations of welding heat input, welding speed, pipe wall thickness, etc. produce different weld results.



Classification of Welding Phenomena



Fluctuation Patterns of Oscillation

2 Weld Heat Input Control

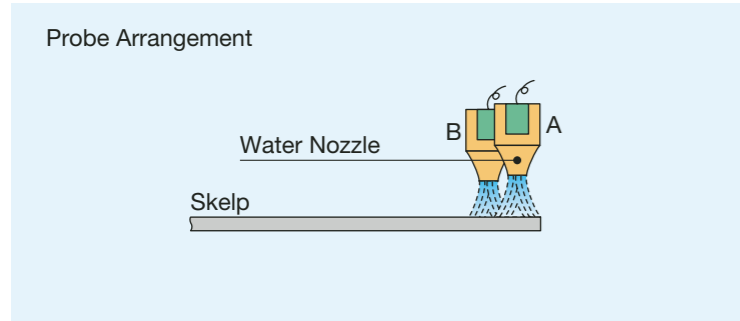
Welding conditions are monitored and controlled within the optimum range by using our unique weld heat input system to minimize oxides included in the weld seam.



Reliable NDT System

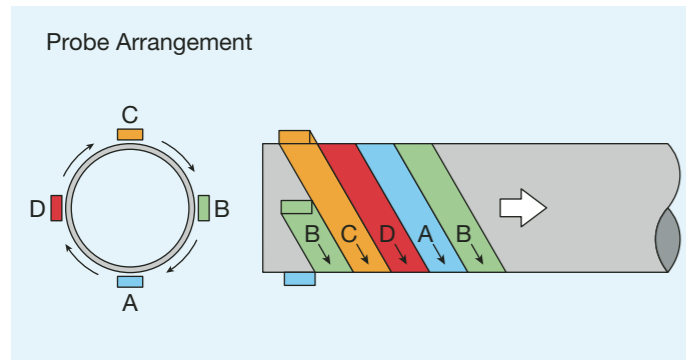
1 Coil Edge UST

After coil edge preparation, both edges of the coil are inspected for laminar imperfection with coil edge UST. (If required)



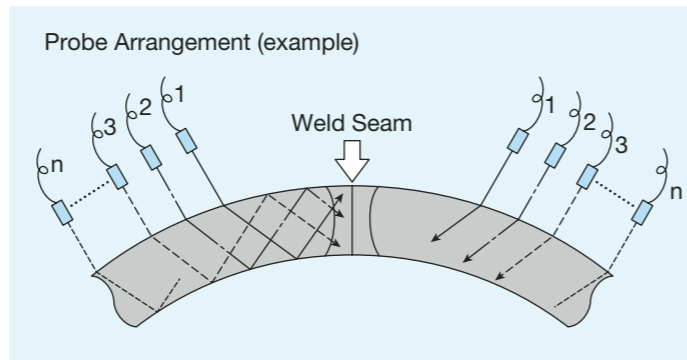
2 Full Body UST

Full body is inspected by a rotary UST unit along full length of welded pipe. (If required)



3 Weld Seam UST

Each pipe is inspected for weld seam imperfection with advanced automated UST for entire wall thickness.



Seam UST

Size Range of ERW Pipe

Nippon Steel's ERW pipe mills produce pipe with outside diameters from 4-1/2 inches (114.3 mm) to 24 inches (609.6 mm). The equipment to produce such pipes reflects Nippon Steel's intent to meet the great demand for larger and heavier steel pipe.

Length

Nippon Steel's ERW mills can produce pipes with length up to 60 feet (18.3 m). These long pipes reduce the number of weld joints and inspections necessary at the site, thus leading to faster construction and lower costs.

Wall Thickness

To produce pipe with wall thickness up to 0.866 inches (22 mm) Nippon Steel has installed large scale forming & welding equipment.

